

Comments Received on Draft Assessment Methodology  
Posted for public comment February 11, 2013 through March 11, 2013.

Comments Received from:

- U.S. EPA Region 5



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

MAY 30 2013

REPLY TO THE ATTENTION OF:

WW-16J

Diana Klemens, Chief  
Surface Water Assessment Section  
Water Resources Division  
Michigan Department Environmental Quality  
P.O. Box 30273  
Lansing, Michigan 48909-7773

RECEIVED

JUN 04 2013

WATER RESOURCES DIVISION

The U.S. Environmental Protection Agency has conducted a review of Michigan's draft 2014 Assessment Methodology, which the State uses for assessing data for 303(d) list development. EPA provided MDEQ draft comments on the draft methodology on March 15, 2013. EPA and MDEQ had subsequent discussions prior to EPA finalizing the enclosed comments.

Thank you for the opportunity to review the draft methodology. We look forward to working with you as you finalize the methodology for use in Michigan's CWA Section 303(d) listing process.

Sincerely,

A handwritten signature in dark ink, appearing to read "Peter Swenson".

Peter Swenson, Chief  
Watersheds and Wetlands Branch

Enclosure

cc: Kevin Goodwin, MDEQ  
Gary Kohlhepp, MDEQ

U.S. Environmental Protection Agency Comments to MDEQ  
regarding draft 2014 Assessment Methodology  
May 29, 2013

I. Warmwater Fishery and Coldwater Fishery

1. The Water Quality and Pollution Control in Michigan 2014 Sections 303(d), 305(b), and 314 IR Draft Assessment Methodology, February 2013 (Draft Methodology), describe various measurements the state may consider in making assessments, particularly the application of the 10% exceedance rate for conventional pollutants (such as dissolved oxygen, temperature, pH, and dissolved solids). EPA is currently reevaluating its guidance<sup>1</sup> on the use of the 10% exceedance rate, and plans to incorporate further explanation into future guidance for the 2016 listing cycle and beyond. Following development of this new guidance and its application for criteria that are expressed in the state's water quality standards (WQS) as "never to be exceeded", EPA may wish to discuss changes to MDEQ's methodology for 2016 to address the "never to exceed" standards for conventional pollutants as written so that the methodology is consistent with both the WQS and future EPA guidance.
2. Section 4.5.1.33 [Ammonia (un-ionized) concentration, p. 7] states that "In general, a decision of 'not supporting' for un-ionized ammonia will be based on a 10 percent exceedance threshold following EPA guidance (EPA 2002)." We do not believe that the 10 percent exceedance threshold is appropriate for ammonia. EPA has stated that "For conventional pollutants, the 305(b) guidelines indicated that whenever more than 10% of the water quality samples collected exceed the criterion threshold, the WQS is not attained (U.S. EPA 1997) (emphasis added)."<sup>2</sup> Ammonia, however, is a toxic pollutant.<sup>3</sup> Therefore, use of the 10 percent exceedance threshold for determining impairment for ammonia is not consistent with EPA guidance. EPA recommends that the methodology be revised to remove the 10 percent exceedance criterion for ammonia.

EPA's 1999 *Update of ambient water quality criteria for ammonia*<sup>4</sup> states:

"The available data for ammonia, evaluated using the procedures described in the 'Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses', indicate that, except possibly where an unusually

<sup>1</sup> Consolidated Assessment and Listing Methodology—Toward a Compendium of Best Practices EPA2002 (CALM), chapter 4 (Using Chemical Data as Indicators of Water Quality), pp. 4-6 and EPA, *Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates (1997)*, vol. 2 (Making use supported determinations), sec. 3.2.4 (Physical/Chemical Methods), p. 3-21.

<sup>2</sup> Consolidated Assessment and Listing Methodology—Toward a Compendium of Best Practices EPA2002 (CALM), chapter 4 (Using Chemical Data as Indicators of Water Quality), pp. 4-6.

<sup>3</sup> EPA, *Guidelines for Preparation of the Comprehensive State Water Quality Assessments (305(b) Reports) and Electronic Updates (1997)*, vol. 2 (Making use supported determinations), sec. 3.2.4 (Physical/Chemical Methods), p. 3-21.

<sup>4</sup> EPA-822-R-99-014. National Technical Information Service, Springfield, VA. update (page 83 in part).

sensitive species is important at a site, freshwater aquatic life should be protected if both of the following conditions are satisfied...

1) The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations.

2A) The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations ...

2B) In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC."

EPA recommends that the methodology reflect the use of this guidance for the acute and chronic ammonia criteria.

3. Section 4.5.1 [Assessment Type: Physical/Chemical] states that support determinations for the specified parameters will generally be based on continuous monitoring requirements for data collection. Please explain why continuous data are required for criteria that are expressed as maximum or minimum values, such as temperature and dissolved oxygen, and why grab samples would only be used to determine insufficient data and not for listing purposes. Also the methodology should indicate how the 10 percent exceedance is calculated for continuous samples.
4. Section 4.6.1.1 [Water Column Toxic Substance Concentrations, p. 9] references Appendix C of the CALM document. Appendix C, Example 1 (Assessing Normality of Continuous Data) discusses the use of the geometric mean to normalize the data used. However the example given is for a conventional pollutant. As discussed in Chapter 4 of the CALM document (Using Chemical Data as Indicators of Water Quality page 4-6) a four day average is recommended for toxic substances. The CALM guidance on page 4-6 states that "The chronic criterion (criteria continuous concentration, CCC) equals the highest concentration of a pollutant to which the aquatic species can be exposed for an extended period of time (4 days) without deleterious effects." The guidance goes on to state "EPA recommended that acute and chronic aquatic life criteria for toxics not be exceeded more than once every 3-year period on the average."

EPA recommends that the draft Methodology be revised to reflect the frequency and duration component of the criteria in question.

## **II. Biological Attainment Thresholds**

1. Sections 4.5.2.1 and 4.6.2.1 [Fish and Macroinvertebrate Communities, pp. 8 & 11]: The Draft Methodology includes attainment thresholds for wadeable streams that categorize waters into excellent, acceptable and poor categories. In prior communications, EPA has expressed concern about whether MDEQ's biological thresholds meet the minimum goal

in the CWA §101(a)(2) of protection and propagation of fish, shellfish, and wildlife. Without a more in-depth discussion with MDEQ regarding the raw data from the reference sites used to develop the thresholds, it is difficult for EPA to evaluate whether the thresholds used to identify waters as impaired are within an acceptable amount of departure from reference conditions. Within the next six months, EPA would like both agencies to commit to begin discussing in sufficient detail the thresholds and determine if there is agreement on whether they provide an adequate level of protection so we can resolve this issue prior to the next listing cycle.

### III. Insufficient Information Determination

1. Sections 4.5.2.1 and 4.6.2.1, [Fish and Macroinvertebrate Communities, pp. 8 & 11]: The Draft Methodology does not explain how MDEQ will determine what type or amount of supporting contextual information would be needed to make a determination of "not supporting" or "insufficient information." For example, the Draft Methodology states that "A determination of not supporting or insufficient information is made for water bodies with macroinvertebrate communities rated poor ... depending on the quality and amount of supporting contextual information available." EPA recommends that the Draft Methodology include clearer procedures for determining whether a waterbody is supporting or not supporting the aquatic life designated uses.

Additionally, the discussion in this section states that "For example, a probabilistically chosen biosurvey site having a poor macroinvertebrate community result with concurrent habitat information indicating good conditions may require the collection of additional information to determine data representativeness" (Draft Methodology at p. 11.). Since the methods that are used in probabilistic surveys are similar to those used in targeted surveys, it is unclear why sites sampled using probabilistic methods require collection of additional information to determine representativeness if they are found to be in poor condition. EPA recommends that the Draft Methodology explain how MDEQ intends to evaluate the data collected in making rating decisions for macroinvertebrate and fish communities.

### IV. Nutrients

1. Section 4.6.1.2 [Water Column Nutrient Concentrations, p. 10] states that "Inland lakes classified as oligotrophic, mesotrophic, or eutrophic are generally determined to support the other indigenous aquatic life and wildlife designated use." We infer from this that MDEQ uses the eutrophic/hypereutrophic boundary for use attainment. To be consistent with the requirements of section 303(d)(1)(A) of the CWA, the attainment boundary should be consistent with Michigan's nutrient narrative standard: "nutrients shall be limited to the extent necessary to prevent stimulation of growths of aquatic rooted, attached, suspended, and floating plants, fungi or bacteria which are or may become injurious to the designated uses of the surface waters of the state." EPA recommends that the methodology explain how eutrophic lake conditions are consistent with the narrative nutrient criterion.

Section 4.6.1.2 also states that "Inland lakes that are classified as hypereutrophic are generally listed as insufficient information with the goal of conducting additional, site specific, monitoring to confirm the trophic designation and whether impairments of the designated uses are realized." We recommend that MDEQ provide more detail in the methodology as to how/when it will determine that a waterbody is impaired.

Kevin Goodwin's letter to Peter Swenson of January 6, indicates that paragraph 1 of Section 4.6.1.2 applies to all waters, and that paragraph two applies only to lakes and impoundments. EPA recommends that this clarification be made in the methodology.

2. Section 4.6.1.2 states that "use support determinations *may* (emphasis added) also be influenced by excessive/nuisance algal and macrophyte growth," and Section 4.6.2.2 [Bacteria, Algae, Macrophytes, and Fungi] (draft Methodology, p. 12), states that "A determination of not supporting *may* (emphasis added) be made if excessive/nuisance growths of algae ... or aquatic macrophytes are present." The use of *may* (emphasis added) in both instances does not seem consistent with the nutrient narrative criterion, "nutrients *shall* (emphasis added) be limited to the extent necessary to prevent stimulation of growths of aquatic rooted, attached, suspended, and floating plants, fungi or bacteria which are or may become injurious to the designated uses of the surface waters of the state." Also, the first paragraph of Section 4.6.2.2 says, "Site-specific visual observation of bacteria, algae, macrophytes, and fungi *may* (emphasis added) be used to make a support determination for the other indigenous aquatic life and wildlife designated use. In addition, water column nutrient concentrations *may* (emphasis added) also be used to support this determination." EPA recommends that these sections be changed to better reflect the narrative and to add more specificity to the approach.

#### **V. Fish Consumption Advisories for Bioaccumulative Contaminants of Concern (BCCs other than Mercury)**

In its January 6, 2012 letter, MDEQ explained that listing for fish tissue contaminants was based on fish consumption advisories for mercury issued by Michigan Department of Community Health (MDCH). This is reflected in the draft methodology. EPA recommends that the methodology also discuss the use of fish consumption assessment results for other Bioaccumulative Chemicals of Concern (BCCs) other than mercury, and how these are linked to use assessment results (i.e., fully supported, not supporting, insufficient information).

#### **VI. Public Water Supply**

1. Section 4.9.1.1, [Toxic Substances in Water Column, p. 20] states: "Michigan's rules do not contain a methodology to derive human health values that protect solely for the consumption of two liters of untreated surface water per day." MDEQ completed a step to address this issue by adding section 4.9.1.2 based on Mich. Admin. Code R.323.1051(2), using dissolved solids data to assess public water supply designated use support. EPA would like to continue to work with MDEQ on developing a more comprehensive methodology.

## VII. Other Topics

1. The assessment methodology divides chemical and biological assessment by fisheries (Draft Methodology, Sections 4.5.1, 4.5.2, pp. 6-9) and other aquatic life designated uses (Draft Methodology, Sections 4.6.1, 4.6.2, pp. 9-12). Both of these uses and most of the criteria assessed under one or the other apply to all surface waters of the State. It would seem reasonable to expect that listings for a given pollutant would be identified for each use. EPA has previously recommended that the assessment methods discussed in these sections be combined under a general aquatic life assessment category. MDEQ has indicated that for some pollutants this may be difficult.<sup>5</sup> Where combining these uses poses a problem we recommend that the state discuss the assessment methodology in each section. For example, DO will have an effect on both the Warmwater Fishery and Coldwater Fishery Use as well as the Other Indigenous Aquatic Life and Wildlife Use. However, DO is only discussed in relation to the Warmwater Fishery and Coldwater Fishery Use in Section 4.5. Since DO affects both types of aquatic life uses we recommend DO be reflected in both sections or be combined into an Aquatic Life section in the methodology. In cases where an aquatic life water quality standard is exceeded, then both the fishery (warmwater or coldwater) and indigenous aquatic life and wildlife designated uses should be designated as not supported.
2. To the extent the Draft Methodology relies on other protocols, such as Procedure 51, supplemental methods and reports, or MDEQ's Quality Management Plan (2005), EPA recommends that the Draft Methodology include links of these documents (or make available hard copies) to further clarify the basis on which MDEQ makes decisions. We note that a link has been added for the Michigan Surface Water Information Management System (MiSWIMS) database which we find useful.

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<sup>5</sup> MDEQ letter to EPA Jan 6, 2012, pp. 8-9.





RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

December 4, 2013

Mr. Peter Swenson, Chief  
Watersheds and Wetlands Branch  
United States Environmental Protection Agency  
Region 5  
77 West Jackson Boulevard (WW-16J)  
Chicago, Illinois 60604-3507

Dear Mr. Swenson:

Thank you for submitting comments on the Water Quality and Pollution Control in Michigan, 2014 Sections 303(d), 305(b), and 314 Integrated Report (IR) Draft Assessment Methodology. The following is in response to those comments dated May 29, 2013. The Michigan Department of Environmental Quality (MDEQ) appreciates the input and support by the United States Environmental Protection Agency (USEPA) for ongoing discussion with regard to outstanding issues involving this, and future development of assessment methodologies:

**I. Warmwater Fishery and Coldwater Fishery**

1. The Water Quality and Pollution Control in Michigan 2014 Sections 303(d), 305(b), and 314 IR Draft Assessment Methodology, February 2013 (Draft Methodology), describe various measurements the state may consider in making assessments, particularly the application of the 10% exceedance rate for conventional pollutants (such as dissolved oxygen, temperature, pH, and dissolved solids). EPA is currently reevaluating its guidance on the use of the 10% exceedance rate, and plans to incorporate further explanation into future guidance for the 2016 listing cycle and beyond. Following development of this new guidance and its application for criteria that are expressed in the state's water quality standards (WQS) as "never to be exceeded", EPA may wish to discuss changes to MDEQ's methodology for 2016 to address the "never to exceed" standards for conventional pollutants as written so that the methodology is consistent with both the WQS and future EPA guidance.

*MDEQ Response: When updated guidance on the use of the 10% exceedance rate is available we would be glad to discuss changes, as necessary, for the 2016 IR cycle, or future ones.*

2. Section 4.5.1.33 [Ammonia (un-ionized) concentration, p. 7] states that "In general, a decision of 'not supporting' for un-ionized ammonia will be based on a 10 percent exceedance threshold following EPA guidance (EPA 2002)." We do not believe that the 10 percent exceedance threshold is appropriate for ammonia. EPA has stated that "For *conventional* pollutants, the 305(b) guidelines indicated that whenever more than 10% of the water quality samples collected exceed the criterion threshold, the WQS is not attained (U.S. EPA 1997) (emphasis added)." Ammonia, however, is a toxic pollutant. Therefore, use of the 10 percent exceedance threshold for determining impairment for ammonia is not consistent with EPA guidance. EPA



recommends that the methodology be revised to remove the 10 percent exceedance criterion for ammonia.

EPA's 1999 *Update of ambient -water quality criteria for ammonia*<sup>4</sup> states:

"The available data for ammonia, evaluated using the procedures described in the 'Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses', indicate that, except possibly where an unusually sensitive species is important at a site, freshwater aquatic life should be protected if both of the following conditions are satisfied.

- 1) The one-hour average concentration of total ammonia nitrogen (in mg N/L), does not exceed, more than once every three years on the average, the CMC (acute criterion) calculated using the following equations.
- 2A) The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion) calculated using the following equations ...
- 2B) In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC."

EPA recommends that the methodology reflect the use of this guidance for the acute and chronic ammonia criteria.

*MDEQ Response: Language has been added to Section 4.5.1.3 to address acute exceedance of the ammonia water quality standard and changes were made to both the acute and chronic language for ammonia to address 1) and 2A), above. No change was made regarding 2B), above.*

3. Section 4.5.1 [Assessment Type: Physical/Chemical] states that support determinations for the specified parameters will generally be based on continuous monitoring - requirements for data collection. Please explain why continuous data are required for criteria that are expressed as maximum or minimum values, such as temperature and dissolved oxygen, and why grab samples would only be used to determine insufficient data and not for listing purposes. Also the methodology should indicate how the 10 percent exceedance is calculated for continuous samples.

*MDEQ Response: A paragraph of clarification was added to Section 4.5.1 to explain the desire for continuous monitoring data. Regardless of the data type, a 'continuous' monitoring effort will consist of discrete samples taken, or measured, repeatedly over a predetermined interval (e.g., temperature measured every five minutes over a two-week period). As such, the 10% exceedance is calculated from the set of all discrete samples.*

4. Section 4.6.1.1 [Water Column Toxic Substance Concentrations, p. 9] references Appendix C of the CALM document. Appendix C, Example 1 (Assessing Normality of Continuous Data) discusses the use of the geometric mean to normalize the data used. However the example

given is for a conventional pollutant. As discussed in Chapter 4 of the CALM document (Using Chemical Data as Indicators of Water Quality page 4-6) a four day average is recommended for toxic substances. The CALM guidance on page 4-6 states that "The chronic criterion (criteria continuous concentration, CCC) equals the highest concentration of a pollutant to which the aquatic species can be exposed for an extended period of time (4 days) without deleterious effects." The guidance goes on to state "EPA recommended that acute and chronic aquatic life criteria for toxics not be exceeded more than once every 3-year period on the average." EPA recommends that the draft Methodology be revised to reflect the frequency and duration component of the criteria in question.

*MDEQ Response: While the MDEQ continues to evaluate water column toxics data using geometric mean as a statistically valid method, references to previous USEPA guidance with regard to the appropriateness of the use of geometric mean have been removed. We will be reevaluating our Water Chemistry Program data prior to the 2016 IR cycle to investigate the incorporation of more explanatory frequency/duration language and an assessment process that fits with our data collection framework but also better reflects USEPA guidance, where possible.*

## **II. Biological Attainment Thresholds**

1. Sections 4.5.2.1 and 4.6.2.1 [Fish and Macroinvertebrate Communities, pp. 8 & 11]: The Draft Methodology includes attainment thresholds for Wadeable streams that categorize waters into excellent, acceptable and poor categories. In prior communications, EPA has expressed concern about whether MDEQ's biological thresholds meet the minimum goal in the CWA §101 (a)(2) of protection and propagation of fish, shellfish, and wildlife. Without a more in-depth discussion with MDEQ regarding the raw data from the reference sites used to develop the thresholds, it is difficult for EPA to evaluate whether the thresholds used to identify waters as impaired are within an acceptable amount of departure from reference conditions. Within the next six months, EPA would like both agencies to commit to begin discussing in sufficient detail the thresholds and determine if there is agreement on whether they provide an adequate level of protection so we can resolve this issue prior to the next listing cycle.

*MDEQ Response: No changes have been made with regard to the MDEQ's thresholds. The MDEQ welcomes the opportunity to discuss thresholds and methodologies, particularly in light of results, as they are available, from the MDEQ comparison between Procedure 51 and the National River and Stream Assessment and the study underway by the USEPA looking at bioassessment methodology results among Michigan, Indiana, and Ohio.*

## **III. Insufficient Information Determination**

1. Sections 4.5.2.1 and 4.6.2.1, [Fish and Macroinvertebrate Communities, pp. 8 & 11]: The Draft Methodology does not explain how MDEQ will determine what type or amount of supporting contextual information would be needed to make a determination, of "not supporting" or "insufficient information." For example, the Draft Methodology states that "A determination of not supporting or insufficient information is made for water bodies with macro invertebrate

2. Section 4.6.1.2 states that "use support determinations may (emphasis added) also be influenced by excessive/nuisance algal and macrophyte growth," and Section 4.6.2.2 [Bacteria, Algae, Macrophytes, and Fungi] (draft Methodology, p. 12), states that "A determination of not supporting may (emphasis added) be made if excessive/nuisance growths of algae ... or aquatic macrophytes are present." The use of may (emphasis added) in both instances does not seem consistent with the nutrient narrative criterion, "nutrients shall (emphasis added) be limited to the extent necessary to prevent stimulation of growths of aquatic rooted, attached, suspended, and floating plants, fungi or bacteria which are or may become injurious to the designated uses of the surface waters of the state." Also, the first paragraph of Section 4.6.2.2 says, "Site-specific visual observation of bacteria, algae, macrophytes, and fungi may (emphasis added) be used to make a support determination for the other indigenous aquatic life and wildlife designated use. In addition, water column nutrient concentrations may (emphasis added) also be used to support this determination." EPA recommends that these sections be changed to better reflect the narrative and to add more specificity to the approach.

*MDEQ Response: Changes in language in Sections 4.6.1.2 and 4.6.2.2 have been made to better reflect that excessive/nuisance algal and macrophyte growth 'will' be used to influence support decisions (second paragraph).*

#### **V. Fish Consumption Advisories for Bioaccumulative Contaminants of Concern (BCCs other than Mercury)**

In its January 6, 2012 letter, MDEQ explained that listing for fish tissue contaminants was based on fish consumption advisories for mercury issued by Michigan Department of Community Health (MDCH). This is reflected in the draft methodology. EPA recommends that the methodology also discuss the use of fish consumption assessment results for other Bioaccumulative Chemicals of Concern (BCCs) other than mercury, and how these are linked to use assessment results (i.e., fully supported, not supporting, insufficient information).

*MDEQ Response: No change was made; Section 4.8.2.1 discusses how assessments are made for other BCCs based on MDCH advisories.*

#### **VI. Public Water Supply**

1. Section 4.9.1.1, [Toxic Substances in Water Column, p. 20] states: "Michigan's rules do not contain a methodology to derive human health values that protect solely for the consumption of two liters of untreated surface water per day." MDEQ completed a step to address this issue by adding section 4.9.1.2 based on Mich. Admin. Code R.323.1051 (2), using dissolved solids data to assess public water supply designated use support. EPA would like to continue to work with MDEQ on developing a more comprehensive methodology.

*MDEQ Response: No change made at this time.*

## VII. Other Topics

1. The assessment methodology divides chemical and biological assessment by fisheries (Draft Methodology, Sections 4.5.1, 4.5.2, pp. 6 -9) and other aquatic life designated uses (Draft Methodology, Sections 4.6.1, 4.6.2, pp. 9-12). Both of these uses and most of the criteria assessed under one or the other apply to all surface waters of the State. It would seem reasonable to expect that listings for a given pollutant would be identified for each use. EPA has previously recommended that the assessment methods discussed in these sections be combined under a general aquatic life assessment category. MDEQ has indicated that for some pollutants this may be difficult. Where combining these uses poses a problem we recommend that the state discuss the assessment methodology in each section. For example, DO will have an effect on both the Warmwater Fishery and Coldwater Fishery Use as well as the Other Indigenous Aquatic Life and Wildlife Use. However, DO is only discussed in relation to the Warmwater Fishery and Coldwater Fishery Use in Section 4.5. Since DO affects both types of aquatic life uses we recommend DO be reflected in both sections or be combined into an Aquatic Life section in the methodology. In cases where an aquatic life water quality standard is exceeded, then both the fishery (warmwater or coldwater) and indigenous aquatic life and wildlife designated uses should be designated as not supported.

*MDEQ Response: No change made.*

2. To the extent the Draft Methodology relies on other protocols, such as Procedure 51, supplemental methods and reports, or MDEQ's Quality Management Plan (2005), EPA recommends that the Draft Methodology include links of these documents (or make available hard copies) to further clarify the basis on which MDEQ makes decisions. We note that a link has been added for the Michigan Surface Water Information Management System (MiSWIMS) database which we find useful.

*MDEQ Response: Links have been included, where applicable. It should also be noted that if documents would be helpful for the review process but are not available online, electronic copies or hardcopies can be provided.*

For your information, the Public Comment period for the Draft 2014 IR is running December 2, 2013, through January 10, 2014, and is posted on the MDEQ calendar. It is posted on our Web page at [http://www.michigan.gov/deq/0,4561,7-135-3308\\_3325---,00.html](http://www.michigan.gov/deq/0,4561,7-135-3308_3325---,00.html) or found by clicking on "News and Events" from our home page then "Calendar." We submitted a link to the electronic copy of the Draft 2014 IR directly to your office on December 2, 2013, for your review and comment.

Mr. Peter Swenson

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December 4, 2013

If you have additional questions or concerns, please contact me at 517-284-5552 or [goodwink@michigan.gov](mailto:goodwink@michigan.gov).

Sincerely,



Kevin R. Goodwin  
Lakes Erie, Huron, and Superior Unit  
Surface Water Assessment Section  
Water Resources Division

cc: Water Body System File, MDEQ

# Comments Received on Draft Integrated Report

Posted for public comment December 2, 2013 through January 10, 2014.

## Comments Received from:

- Mr. Richard Sloat, Iron River, Michigan



January 09, 2014

Hello Kevin,

I appreciate the opportunity to comment on the status of the water quality of a particular water body in Iron County, Michigan. This water body, a 2 mile stretch of the Iron River, has been and continues to be contaminated with acid runoff from existing waste rock from abandoned mines and from the abandoned mines themselves. Remediation is currently being attempted at the abandoned Buck and Dober Mines in this stretch.

The first area of concern is a waste rock pile, longitude N46-04-43.5, latitude W88-38-28.8, located in the NE ¼ - SE ¼, Section 35, T43N-R35W. This pile was relatively untouched for over 50 years. In recent years some of the waste rock has been hauled away leaving previously unexposed mine waste rock exposed to the elements. This waste rock is within 20 feet of the west bank of the Iron River.

I am sure with the coming spring season there will be a ponding effect and either a direct discharge into the Iron River or seepage through the remaining waste rock into the river, or both. Historically the waste rock from these abandoned mines is heavily laden with pyrite-bearing slate and sulfur-bearing black slate, that, when exposed to water and air, creates acid which will leach toxic metals. (Page 147 third paragraph, 150 and 151, of attached JOHNSON.pdf)

I suspect there has been significant run-off from this pile in the past. A couple of years ago I was wading in the river and the bottom was slippery. Was the river bottom slippery from "yellow boy"? From a brownish algae?

Approximately ½ mile downstream is the beginnings of the Hiawatha Group of mines which includes the Dober. The Dober has remediation in place but I feel this is just a "band-aid" approach. The remediation does not stop the acid mine water from leaving the Dober pit.

On page 171 of the JOHNSON.pdf there is a sketch depicting the relationship between the Hiawatha #2 and the Dober and following that, Johnson's testing and analysis. Johnson's conclusion is that the fresh water head at the Hiawatha #2 is pushing acidic water out of the Dober pit. Johnson also concludes on page 182, last paragraph, that pumping the fresh water would eliminate the imbalance and either stop or greatly reduce acid drainage from the Dober pit.

Using technology such as solar panels to power D.C. pumps to remove the fresh water could possibly stop acidic water flowing from the Dober. As it is now, toxic water from the pit is flowing into the settling ponds where precipitates accumulate. Then the water discharges into the Iron River. The toxic sediments will eventually need to be dredged and trucked to a hazardous waste facility, as with the dredging and trucking at the Buck Mine in 2008 which cost slightly more than 1 million dollars.

Also by eliminating the discharge into the river there would be an elimination of the cumulative effect of the contaminants. (See Dober.jpg)

Another mile down from the Dober is the abandoned Buck Mine where remediation is also taking place. At the moment this is the Michigan Department of Environmental Quality's responsibility. This site is similar to the Dober but the Buck, before remediation, did not have concentrated acid water comparable to the Dober. Page 155 of the Johnson.pdf indicates water testing at site 12 (Dober drainage) and site 9 (Buck drainage). In 1997 the

DEQ implemented an interim response system to improve the water quality discharging to the Iron River at the Buck Mine Site.

In a 2000 and 2001 summary Golder Associates, on behalf of the DEQ, stated:

- 1) Waste rock at the Site contains soluble contaminants (e.g. aluminum, copper, iron, lead, manganese, and nickel) and is a source of acid drainage to the interim response treatment ponds, groundwater and the River.
- 2) Waste rock at the Site has a significant potential to generate additional acid due to the presence of sulfides and oxidation products.
- 3) Water infiltrating through the waste rock at the Site has contaminated, and continues to contaminate, the groundwater with cadmium, chromium, copper, manganese, nickel, zinc, silver, and mercury in concentrations of up to two orders of magnitude greater than the groundwater surface water interface criteria established under Section 20120a(1)(a) of the NREPA.

Further, to quote Dr. Johnson, page 194, 2<sup>nd</sup> paragraph, "...the rather large total volume of mineralized water coming from the surface piles suggests some of the drainage may originate from within the mines underlying the piles."

In a 2009 report Weston Solutions Inc. states:

"The analytical data indicated that low pH, metal laden groundwater continues to flow into the interim response system through seeps located along the eastern banks of the ponds. Analytical data and field measurements from within the ponds show increased water quality including, but not limited to, increasing pH and the reduction of inorganic contaminants and toxicity within the water as it flows through the interim response system. Finally, as the system waters flow through Wetland Area A and into the Iron River, the analytical results from the August 2008 sampling event demonstrate that the treated water is within the chemical and toxicological regulatory standards for contaminants in all but one of the field parameters (specific conductivity)."

The Weston Summary goes on to praise the accomplishments of the interim response system, citing increased pH due to neutralizing limestone throughout the system, and also cites a reduction of total iron and manganese concentrations. (See Weston Optimized.pdf) The DEQ has this on file, as I'm sure the Johnson Study.

The Weston Summary indicates or leads a person to believe that the Buck Remediation Site is working well. And I assume the same would be said by people involved with the Dober Site, but the fact is the water being discharged into the Iron River from the two remediation sites is not of the same quality as the Iron River upstream from the remediation sites. Compare what is being discharged to Johnson's findings on pages 152, 155 and 215-220. (Sample # 5)

In a November 2012 MDEQ Staff Report, A Biological Survey Of The Iron River Upstream And Downstream Of The Buck Mine Discharge Iron County Michigan June 2012, concludes, "The monitoring at the Buck Mine appears to show that the treatment is working and is effective....."

The report does seem quite good but I feel requires more investigation. The water chemistry results, Table 3, show no indication of testing for manganese or uranium and other analytical testing results compared to the testing that was done in the Weston

Summary (see Weston.pdf). And some of the results from 2012, Table 3, are higher than comparable water sample testing done in 2008 at location A-1 and A-3. (A-1 Weston = Downstream Table 3, A-2 Weston = Buck Mine Discharge Table 3, A-3 Weston = Upstream Table 3) Sorry, I did not have time to create a pdf of the Staff Report. I will provide one if asked.

On page 10 of the Staff Report the temperature of 61.1 and 61 degrees Fahrenheit converts to over 16 degrees Celsius which is higher than the acceptable temperature of less than 15 degrees Celsius as referenced in the Weston Summary at locations A-1 (page 1 of 19) and A-3 (page 3 of 19) of June 2006.

None of the water sample testing from 1997 up to the present water sample testing, that I am aware of, is being compared to the water quality further upstream at Location 5 shown on page 155 of the Johnson Study. The qualitative macroinvertebrate sampling as shown in the Staff Report should also be compared with relatively uncontaminated water of the Iron River at Location 5 or further upstream yet.

On page 10 of the Staff Report there is mention of a habitat rating being "slightly impaired". When I read that I thought of a humorous comment one time of a woman being a little pregnant. Being a little pregnant is still being pregnant so is slightly impaired still impaired?

Dr. Johnson speculated that the cumulative effect of the discharges prior to remediation was probably responsible for the presence of manganese nodules in the Green Bay at the mouth of the Menominee River, with the Iron River being an indirect tributary. (Page 166 and 167 - JOHNSON.pdf)

So, even though the remediation has reduced the concentration of acidic water and reduced the amount of metals being discharged into the river from the Buck Site, and I'm assuming the Dober as well, the ongoing cumulative effect is significant.

In conclusion, as long as there is going to be "passive remediation" at the Buck and Dober Mine Sites with no attempt to prevent fresh water from flowing through the abandoned sites (thereby causing contaminated water to discharge into the Iron River) and no remediation at the waste rock pile in the NE ¼ - SE ¼, Section 35, T43N-R35W, this area of the Iron River must be classified as impaired from the waste rock pile, longitude N46-04-43.5, latitude W88-38-28.8 to the County Road 424 Bridge, longitude N4-03-30.3, latitude W88-37-37-37.2 immediately below the Buck Remediation Site.

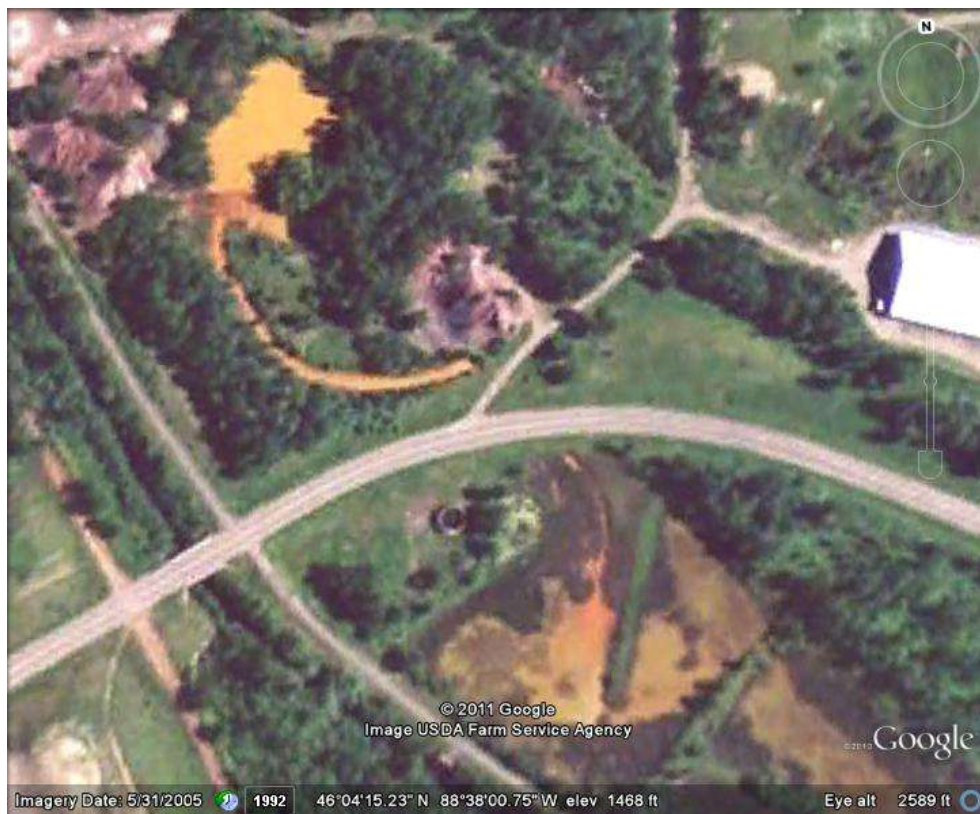
Please let me know if this portion of the Iron River is going to be classified as impaired and if not, please provide an explanation. (See Impaired.jpg)

Also attached are three jpg's from the Buck Site, Geese, Outfall and Buck Gunk. Buck Gunk was a photo taken outside the Outfall in the wetlands.

Thank you again for the opportunity to comment.

Sincerely,

Richard Sloat  
223 8<sup>th</sup> Avenue  
Iron River, MI. 49935  
906-265-0751



"Dober.jpg"



"Impaired.jpg"





"Outfall, 3-18-12 159.jpg"



"Geese, 3-18-12 148.jpg"



"Buck Gunk.jpg"

Other Referenced Submittals (Available upon request)

- "Weston.pdf": Liebau, D.P. et al. 2009. Dredging and System Optimization Summary Report for the Buck Mine Discharge Site Interim Response System Dredging and Optimization Caspian, Iron County, Michigan, Site Identification No. 3600009. Weston Solutions of Michigan, Incorporated, Houghton, Michigan. 99 pages.
- "Johnson.pdf": Johnson, A.M. and G. Frantti. 1978. Study of Mine Subsidence and Acid Water Drainage in the Iron River Valley, Iron County, Michigan. Michigan Technological University, Houghton, Michigan. 232 pages.





RICK SNYDER  
GOVERNOR

STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
LANSING



DAN WYANT  
DIRECTOR

March 7, 2014

Mr. Richard Sloat  
223 8th Avenue  
Iron River, Michigan 49935

Dear Mr. Sloat:

Thank you for your comments dated January 9, 2014, on the Draft Water Quality and Pollution Control in Michigan, 2014 Sections 303(d), 305(b), and 314 Integrated Report (Integrated Report), regarding the assessment classification of the Iron River in/near the towns of Caspian and Iron River, Iron County, Michigan, with particular respect to the possible effects of mine runoff in the areas of the (now defunct) Dober and Buck Mines sites. Staff of the Department of Environmental Quality (DEQ), Water Resources Division (WRD), Surface Water Assessment Section (SWAS), offer the following comments:

We appreciate the thoroughness of your comments in addressing historic information at the sites including ongoing remediation efforts. As you point out, recent information in the 2009 Weston Report you provided as well as through biological and water chemistry sampling conducted in 2012 by the SWAS (DEQ Report #MI/DEQ/WRD-12/037) demonstrate that remediation efforts appear to be functioning as designed, mitigating potential impacts by the mine drainage. Specifically, the 2012 SWAS monitoring showed a macroinvertebrate community of acceptable conditions and no exceedances of Michigan's Water Quality Standards (WQS) for the parameters sampled.

It is important to note, when comparing water chemistry results to WQS, the results are not compared to upstream or historic conditions to determine if WQS are being met and the Designated Uses attained. Rather, water chemistry results are compared against values for toxic substances developed to be protective of public health and aquatic life using R 323.1057 of the Part 4 rules, WQS ([http://www.michigan.gov/documents/deq/wb-swas-rules-part4\\_254149\\_7.pdf?20140227072030](http://www.michigan.gov/documents/deq/wb-swas-rules-part4_254149_7.pdf?20140227072030)), based on a range of relevant aquatic toxicity data for the specific substance in question.

One of your comments noted that the 2012 SWAS sampling did not include either manganese or uranium as part of the water chemistry suite. We contacted staff of the DEQ, Remediation and Redevelopment Division (RRD), and were able to obtain additional water chemistry data collected in 2013 as part of the ongoing monitoring. This included both manganese and uranium data from 3 points in the Iron River adjacent to the Buck Mine site. Manganese values were not exceeding WQS in any sample. However, uranium, for which Michigan does not have a WQS, appeared elevated in one sample result.

In follow-up conversations with staff of the RRD and SWAS, Water Toxics Unit, we understand that uranium continues to be actively examined to understand how it may be regulated under Michigan's Rules and, ultimately, what levels may present concerns to public health and/or aquatic life. Based on this information, we propose to categorize this reach of Iron River as "Insufficient Information" (rather than the "Fully Supporting" categorization) in the Draft Integrated Report. An Insufficient Information designation in this case signifies the ongoing

work related to uranium both within this reach of the river and in a broader sense. We conduct annual reviews of "targeted" monitoring needs related to water quality and part of that process screens for Insufficient Information designations in a continued effort to obtain data and decisions to fully assess the relevant designated use; as such it will function as a highlight to this reach of river for continued attention.

We appreciate your interest and concern in this area of the Iron River watershed. Future monitoring of these former mine sites will be an important part of determining that the remediation efforts continue to function as designed and that public health and aquatic life remain protected.

If you have additional questions or concerns, please contact me at 517-284-5552 or [goodwin@michigan.gov](mailto:goodwin@michigan.gov).

Sincerely,



Kevin R. Goodwin,  
Lakes Erie, Huron, and Superior Unit  
Surface Water Assessment Section  
Water Resources Division

cc: Ms. Diana Klemans, DEQ  
Mr. Michael Alexander/Water Body System File, DEQ